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**Policy issues for science, technology and innovation:  
regional mechanisms for technology transfer for sustainable  
development****Report of the Asian and Pacific Centre for Transfer of  
Technology on its activities during the period 2016–2018****Note by the secretariat***Summary*

Since its inception in 1977 as a subsidiary body of the Economic and Social Commission for Asia and the Pacific, the Asian and Pacific Centre for Transfer of Technology has been supporting member countries in nurturing and strengthening national innovation systems and creating an enabling environment for the development and transfer of technology so that member countries can meet development challenges in today's globalized knowledge-based economy.

In recent years, a number of disruptive innovations have emerged with the use of digital information such as big data, the Internet of things, massive open online courses, 3D printing and digital automation. Such new technologies and related innovations have changed the landscape of different industries, making them more competitive and providing policymakers with the opportunity to apply such technologies for social purposes. The Centre is keen to develop new capacity-building activities in the area of new and emerging technologies to support member countries in their efforts to take full advantage of such innovations in order to achieve the Sustainable Development Goals.

The present document contains a review of regional mechanisms for the transfer of technology to promote sustainable development with reference to the activities conducted and the outcomes achieved by the Centre during the period 2016–2018. It also contains highlights of future areas of work for review and consideration by the Committee on Information and Communications Technology, Science, Technology and Innovation.

The Committee may wish to provide input and suggestions to support and strengthen the Centre's work for achieving the Sustainable Development Goals.

\* ESCAP/CICTSTI/2018/L.1.

## **I. Introduction**

### **A. Background and institutional linkages**

1. At the first Asian Conference on Industrialization held in Manila in 1965, a series of recommendations was made for a regional mechanism to accelerate transfer of technology in the region. Subsequently, in accordance with resolutions 159 (XXXI) of 1975 and 164 (XXXII) of 1976 of the Economic and Social Commission for Asia and the Pacific (ESCAP), the Regional Centre for Technology Transfer was established in Bangalore, India, on 16 July 1977. The Government of India offered host facilities for the Centre. In 1985, in accordance with Commission resolution 243 (XLI), the Centre was renamed the Asian and Pacific Centre for Transfer of Technology. The Centre was relocated from Bangalore to New Delhi on 1 July 1993.

2. In the four decades of its operation, the Centre has assisted members and associate members of ESCAP in strengthening their capabilities to develop and manage national innovation systems; develop, transfer, adapt and apply technology; improve the terms of transfer of technology; and identify technologies relevant to the region and promote their development and transfer.

3. The Centre's programmes and activities contribute to subprogramme 2 (Trade and investment) of the Commission's strategic framework for the period 2016–2017 and subprogramme 2 (Trade, investment and innovation) of the strategic framework for the period 2018–2019.

4. In particular, the Centre contributed to expected accomplishment (b) (Strengthened regional cooperation mechanisms in trade, investment, enterprise development, innovation and technology transfer for inclusive and sustainable development) and expected accomplishment (c) (Increased capacity of ESCAP member States to formulate and implement policies on trade, investment, innovation, enterprise development and technology transfer for inclusive and sustainable development, including those that are gender-responsive) of subprogramme 2 of the strategic framework for the period 2016–2017.

5. The Centre also contributed to expected accomplishment (b) (Broadened and deepened capacity of member States to advance trade, investment, enterprise development, science, technology and innovation that support sustainable development and include gender perspectives) and expected accomplishment (c) (Strengthened regional engagement to advance trade, investment, enterprise development, science, technology and innovation for sustainable development) of subprogramme 2 of the strategic framework for the period 2018–2019.

6. The Governing Council of the Centre is composed of representatives of 12 ESCAP member States and one representative nominated by the host country, India. At its seventy-third session, in 2017, the Commission elected Bangladesh, China, Fiji, Indonesia, the Islamic Republic of Iran, Kazakhstan, Malaysia, Pakistan, the Philippines, the Republic of Korea, Sri Lanka and Thailand as members of the Council for the period 2017–2020. The Council meets once a year, advises on the formulation and implementation of the programme of work and reviews the administrative and financial status of the Centre. All activities of the Centre are implemented in partnership with the national focal points designated by the respective elected member States with the active involvement of other partner institutions. The national focal points and partner institutions assist the Centre in hosting the training programmes,

mobilizing local networks and targeting participants for dissemination and outreach of its capacity-building programmes.

**B. Alignment of the Centre's programme of work with regional needs for capacity-building on innovation and technology transfer for sustainable development**

7. Technologies and innovation are central to long-term economic growth. The capacity of countries to compete in the global market depends more and more on their ability to innovate and apply the relevant technology to industries and productive sectors. Achieving the Sustainable Development Goals will require action in a number of areas, including harnessing and maximizing the potential of technological innovation in many areas of economic activity.

8. Although technology is supposed to be a key driver of economic growth, in practice its contribution to economic growth varies greatly across countries. Accelerating economic growth in countries with special needs is key to reducing income inequalities in the region, but most of these nations are hampered by low technological capabilities. The theme study for the seventy-fourth session of the Commission was entitled *Inequality in Asia and the Pacific in the era of the 2030 Agenda for Sustainable Development*. In the study, the following key reasons for innovation weakness in countries with special needs were highlighted: low absorptive capacity of firms, weaknesses in knowledge generation and diffusion, weak linkages between academia and industry, and weak framework conditions, together with poor infrastructure. Innovation activities, including the commercialization and transfer of technologies, and policies promoting the adoption and diffusion of technologies are important for ensuring that the poor benefit from technologies.

9. The Centre is actively engaged with countries in the Asia-Pacific region to help them to align national science, technology and innovation strategies with sustainable development; it is also engaged in helping developing and least developed countries in leapfrogging to bridge the technological divide with developed countries. The Centre helps member States to strengthen national innovation systems by enhancing innovation capacity, promoting technology transfer and deployment, and promoting technology entrepreneurship through multi-stakeholder partnerships and capacity-building events. Through targeted capacity-building events, knowledge products and regional cooperation platforms, the Centre facilitates knowledge-sharing among countries with regard to new and emerging technological sectors, such as renewable energy, nanotechnology and climate-resilient agriculture. While implementing its programme of work, the Centre leverages South-South, North-South and triangular cooperation modalities, in accordance with the needs of the member States.

**II. Results and outcomes achieved since the first session of the Committee on Information and Communications Technology, Science, Technology and Innovation**

10. Since the first session of the Committee on Information and Communications Technology, Science, Technology and Innovation, held from 5 to 7 October 2016, the Centre has continued to deliver demand-driven programmes on innovation and technology transfer through capacity-building activities, regional technology cooperation, and technology information sharing and networking. These activities support member States in advancing the 2030 Agenda for Sustainable Development. The focus areas are science,

technology and innovation policy; technology transfer and commercialization; enhancing the competitiveness of technology-based enterprises; and promoting new and emerging technologies such as biotechnology, nanotechnology and renewable energy.

11. Annex I contains a table with a list of the Centre's activities and a table with a list of the special issues of the *Asia-Pacific Tech Monitor* published during the reporting period.

## **A. Capacity-building**

12. The Centre assisted member States with capacity-building to strengthen their national innovation systems by enhancing policymaking capacity, promoting technology transfer and deployment, enhancing the competitiveness of enterprises, and promoting new technologies and entrepreneurship. During this reporting period, the Centre focused on (a) training activities on innovation, technology transfer and commercialization skills and (b) regional technology cooperation.

### **1. Training activities on innovation, technology transfer and commercialization skills**

13. The Centre contributed to strengthening the technology transfer capacity of science, technology and innovation stakeholders in the member countries. The training modules focused on developing skills for planning and managing technology transfer projects; technology transfer support services for small and medium-sized enterprises and entrepreneurs; and capacity-building for technology transfer and commercialization.

14. The Centre enhanced the technology transfer capacities of stakeholders through 15 demand-driven training programmes in eight member countries, namely China, India, Kazakhstan, Malaysia, Myanmar, the Philippines, Singapore and Thailand, reaching more than 500 participants.

15. Workshop evaluations indicated that more than 90 per cent of participants increased their understanding of key policy issues, strategies and good practices for promoting technology transfer and commercialization.

### **Key outputs**

16. The capacity-building events and training activities enhanced understanding of the participating policymakers, representatives from technology promotion and transfer institutions, and science, technology and innovation stakeholders on policy interventions to achieve the Sustainable Development Goals, technology transfer mechanisms, technology development and commercialization platforms, and also concrete suggestions for follow-up actions were provided. The key outputs for this area include:

(a) In a workshop delivered in Manila, the Centre influenced the Government of the Philippines to consider expanding the mandate of the Department of Science and Technology to include agro-based enterprises in their portfolio;

(b) Through a project delivered in Myanmar, the Centre facilitated the transfer of 59 lines of elite mung beans for the benefit of smallholder farmers in Myanmar;

(c) The Centre influenced the government of the State of Andhra Pradesh, India, to promote innovation through fairs and annual events to support innovative small and medium-sized enterprises and technology entrepreneurship;

(d) The Centre initiated efforts for the signing of a memorandum of understanding between ESCAP and the Council of Scientific and Industrial Research of the Government of India to provide broad-based support to the Council laboratories in the areas of technology transfer and commercialization, capacity-building, and technology cooperation and networking in the Asia-Pacific region.

## 2. Strengthening national innovation systems

17. The Centre assisted member countries in strengthening their national innovation systems by enhancing innovation capacity, promoting technology transfer and deployment, enhancing the competitiveness of enterprises, and promoting new technologies and entrepreneurship. The activities were conducted in partnership with key national institutions in thematic areas such as the role of government in promoting innovation; science and technology parks; intellectual property handling; water sustainability; nanotechnology; biotechnology; the water-energy-food nexus; trade promotion and environmental policy development; and innovation management of small and medium-sized enterprises.

18. The Centre strengthened the capacities of stakeholders through 14 demand-driven activities in eight member countries, namely China, India, Indonesia, the Islamic Republic of Iran, Malaysia, the Philippines, Sri Lanka and Thailand, reaching more than 1,500 participants.

19. The evaluation of activities indicated that more than 80 per cent of participants increased their understanding of policy issues, strategies and good practices for facilitating nanotechnology, innovation and governance of national innovation systems.

### Key outputs

20. The activities resulted in sharing best practices and strategies on technology transfer, commercialization and regulatory and institutional frameworks for enabling the innovation ecosystems of member countries. Key policy recommendations were also provided. The key outputs for this area include:

(a) Policy advice provided to the Government of India on adopting eco-innovation practices, at a national consultation on the Sustainable Development Goals held in India in August 2016;

(b) Policy advice provided to the Government of Indonesia on setting up science and technology parks at the International Conference on Science Technology Park in October 2016;

(c) Recommendations provided on establishing a collaborative regional cooperation framework in the water sector and creating an online compendium of water technologies at an international workshop on water sustainability held in India in April 2017;

(d) An international conference on nanotechnology was held in Malaysia in May 2017. One of the key recommendations from the conference was to establish a regional nano-safety platform for stakeholders in countries belonging to the Association of Southeast Asian Nations (ASEAN). The Government of Malaysia said it would take the lead role in establishing this

platform which would facilitate sharing of laboratories and facilities for testing of nano-materials and nano-products across the ASEAN region.

### 3. Regional technology cooperation

21. The Centre facilitated increased engagement and regional cooperation between member States to effectively harness science, technology and innovation for sustainable development. Some of the focus areas included science, technology and innovation policy and strategy, technology transfer and commercialization, innovation strategies for sustainable development, green technologies and the water-food-energy nexus.

22. The Centre, through regional technology cooperation activities, encourages member States to enhance South-South, North-South and triangular regional and international cooperation on science, technology and innovation.

23. The Centre promoted regional cooperation by facilitating the organization of the Governing Council sessions, international conferences and regional consultations. These programmes were aimed at government policymakers and designated officials from institutions in ESCAP member countries relating to science, technology and innovation, public research, technology and technology transfer.

#### Key outputs

24. The Centre organized activities to foster regional technical cooperation for achieving the Sustainable Development Goals through science, technology and innovation and for inclusive sustainable development. These activities facilitated the exchange of perspectives and experiences among science, technology and innovation stakeholders and provided a platform for member countries to share specific priorities and needs on innovation, technology transfer and commercialization. The key outputs for this area include:

(a) The twelfth and thirteenth sessions of the Governing Council of the Asian and Pacific Centre for Transfer of Technology were held in 2016 and 2017, respectively, in conjunction with two international conferences that provided the Council with substantive inputs for discussion and suggestions on future capacity-building activities;

(b) The two Council sessions and two international conferences successfully increased regional and South-South cooperation among the Council member countries to promote technology transfer; the Council adopted the Centre's programme of work for 2017 and 2018, which aims to strengthen member countries' South-South collaboration and technology transfer;

(c) The two international conferences provided a platform for policymakers and sector experts from the Council member countries to share experiences and best practices on key areas of science, technology and innovation;

(d) As a result of one of the regional consultations, the Government of Thailand proposed that it would design and host the regional knowledge platform on the water-energy-food nexus for sharing experiences, best practices and country-specific updates among the participating member countries.

## B. Technology intelligence

25. One of the key mandates of the Centre is to provide a platform for the provision of technology information services to policymakers, technology transfer intermediaries and small and medium-sized enterprises in the Asia-Pacific region to enable them to build up a technology knowledge base to foster balanced growth in an environmentally sustainable manner. The Centre therefore facilitates transmission of information to strengthen the technology intelligence of member States to keep abreast of global technological developments and to use them strategically.

26. The Centre, through its knowledge products, research and technology information platforms and databases, complemented the substantive capacity-building programmes on various themes and topics related to science, technology and innovation.

### 1. Periodicals and knowledge products

27. The Centre publishes the online periodical *Asia-Pacific Tech Monitor* ([www.techmonitor.net](http://www.techmonitor.net)), which features articles on technology trends and developments, technology policies, the technology market, innovation management, technology transfer, and new products and processes. The online periodical was disseminated free of cost and shared with approximately 2,200 subscribers from member countries by email. The periodical was also regularly disseminated through the Centre's and the Commission's social media platforms. The nine special issues of *Tech Monitor* featured 39 articles by 69 authors and experts from 16 countries, including Australia, Austria, Bangladesh, China, India, Indonesia, Japan, Malaysia, Nepal, Pakistan, the Philippines, the Republic of Korea, Sri Lanka, Thailand, the United Kingdom of Great Britain and Northern Ireland and Viet Nam. The issues also included information on more than 100 of the latest technological innovations from around the world in areas such as biotechnology, sustainable/renewable energy technology, water, nanotechnology and rural applications. Technology policy and market-related news items from Asia-Pacific countries were also compiled and disseminated through *Tech Monitor*.

28. Approximately 90 short articles providing useful how-to guides, best practices and tips for small and medium-sized enterprises were disseminated in the section of the periodical entitled "Business coach for innovation firms". Additionally, the periodical included more than 100 selected technology offers and technology requests from 14 countries, including Bangladesh, China, Czechia, France, Hungary, India, the Islamic Republic of Iran, Malaysia, Pakistan, Poland, Sri Lanka, Thailand, the United Kingdom and Viet Nam. This information helped technology seekers to identify technology sources through the Centre. For instance, the Centre received a technology request from the National Agency for Technological Development of Kazakhstan for help in identifying potential providers of technologies noted in *Tech Monitor*.

29. The Centre also developed, published and disseminated 30 online issues of *Value Added Technology Information Service (VATIS) Update* on biotechnology (eight), food processing (four), new and renewable energy (eight), ozone layer protection (six) and waste management (four), which disseminated information on the latest technological innovations, technology policies and market-related developments, recent publications and events.

30. The Centre partnered with prominent institutions to jointly publish two issues of *VATIS Update*. *Ozone Layer Protection* was published with support from the Ozone Cell of the Ministry of Environment, Forest and Climate

Change of the Government of India. *Biotechnology* was co-published with the Biotech Consortium India Limited, an undertaking of the Government of India.

31. As recommended by the Governing Council at its twelfth session, held in December 2016, *VATIS Update* issues on food processing, ozone layer protection and waste management were discontinued, effective January 2017. Similarly, *VATIS Update* issues on biotechnology and new and renewable energy were discontinued, effective January 2018 as decided by the Council at its thirteenth session, held in November 2017. These issues were discontinued as a cost-saving and streamlining measure as *Tech Monitor* also covers the technology sectors that were the focus of *VATIS Update*.

32. More than 30,700 page views were recorded for the online periodicals, which were largely accessed by science, technology and innovation stakeholders in Australia, Brazil, China, Germany, India, Indonesia, the Islamic Republic of Iran, Italy, Japan, Malaysia, the Philippines, the Republic of Korea, Singapore, Sri Lanka, Thailand, the United Kingdom and the United States of America.

## 2. Research, analysis and reference materials

33. The Centre carried out normative and analytical studies of regional relevance to identify trends, highlight good policies and practices, and foster regional cooperation. In addition, the Centre produced reference materials. Those materials are detailed in the following paragraphs.

34. ***NIS Diagnosis and STI Strategy Development to Achieve National Sustainable Development Goals***. This training manual on national innovation systems describes the process of adopting a national innovation system framework and strategies to strengthen the process of creating and diffusing new technologies and innovation within a nation's economy. The manual is useful for policymakers working within government ministries and institutions that support technological change, as well as for researchers and students.

35. ***Policies, Institutions and Processes to Support Value Chains for Seed Development for Pulses, Legumes and Oil Crops in the Dry Zone of Myanmar***. This case study contains information on the critical issues and barriers for seed industry development in Myanmar to support policymakers in making informed decisions related to strengthening the value chain for the seed industry. The Centre highlighted that the current systems for seed production and distribution and the associated extension services are not able to meet the requirements of farmers in the dry zone of Myanmar. It also emphasized that a shift in the policy approach from the current top-down structure to a bottom-up approach with the active involvement of stakeholders from the grass-roots level is essential for strengthening the value chain for seed enterprise development in Myanmar.

36. ***Supporting Value Chains for Seed Development of Pulses, Legumes and Oil Crops in Myanmar's Dry Zone***. This policy brief contains information on the barriers to and constraints on seed enterprise development in the dry zone of Myanmar. The formal seed distribution system is ineffective due to financial constraints as well as weaknesses in monitoring the process of seed distribution among contract farmers. This requires policymakers in Myanmar to consider developing a national seed policy to help to implement the Seed Law enacted in 2011. The Centre emphasized that the Government should increase funding to support research and development, testing and extension services and prioritize capacity-building of government officials, staff of seed-

related associations and farmers to accelerate the seed enterprise development in the country.

### **3. Online technology platforms and databases**

37. The Centre integrated various stand-alone information technology databases and tools into one single website in order to facilitate usage by member countries. As part of this initiative, the technology databases from the Centre's key technology transfer portal, Technology4SME.net, was migrated to the Centre's website. The Renewable Energy Cooperation-Network for the Asia-Pacific website was migrated and integrated with the Centre's website to provide ease of access to users interested in renewable energy technologies and partnerships. The Centre designed a new section, Global Technology Databases, on its website to replace Asia-Pacific Technology Information Tracking and Unified Data Extraction (APTITUDE) and the search functions available through this search engine. The Global Technology Databases section currently provides direct access to various national and international technology databases to the users of the Centre's technology transfer services.

38. The Centre facilitated business-to-business meetings in specific sectors in partnership with key nodal agencies in member countries; provided technology information services through information portals and technology publications; and established specialized technology transfer networks in specific sectors to enhance cross-border technology-based business and research cooperation.

## **III. Future focus areas and programmes**

39. The Centre assists members and associate members of ESCAP in strengthening innovation and technology transfer capacities that are critical to achieving the Sustainable Development Goals. In addition, the Centre's programme of work is aligned with the Technology Facilitation Mechanism launched by the United Nations, which aims to increase the creation and use of innovative technologies through multi-stakeholder partnerships to help to achieve the 2030 Agenda for Sustainable Development.

### **A. Ongoing projects**

40. Sustainable Development Goal 17 of the 2030 Agenda identifies technology as one of the key means of implementation. In partnership with the Trade, Investment and Innovation Division of ESCAP, the Centre is implementing a project on evidence-based innovation policy for effective implementation of the 2030 Agenda in the Asia-Pacific region. The project was awarded funding from the eleventh tranche of the United Nations Development Account.

41. Through this project, the Centre will strengthen the capacity of least developed countries in South Asia, South-East Asia and small island developing States to formulate evidence-based innovation policy. Activities under this project will be implemented in partnership with key nodal agencies working on science, technology and innovation, technology development and promotion agencies, policymakers, industrial federations and non-governmental organizations through a variety of cooperation modalities, including South-South, North-South and triangular cooperation. Implementation started in 2018, and all activities are expected to be completed in 2021.

42. The Centre will continue to publish and upgrade the periodical *Asia-Pacific Tech Monitor*. The periodical will continue to be disseminated widely through the Centre's website and social media, such as Facebook and Twitter.

#### **B. Forthcoming events in 2018**

43. Annex II contains a table with a list of forthcoming activities to be organized by the Centre and held from June 2018 onwards.

### **IV. Matters calling for the attention of the Committee**

44. The capacity-building activities of the Centre can play an important role in supporting member States in advancing the 2030 Agenda and the Addis Ababa Action Agenda of the Third International Conference on Financing for Development. The Centre seeks inputs and suggestions from the Committee on which frontier technology the Centre's programme of work should focus on as well as on the specific needs of the member countries with regard to capacity-building for innovation and technology transfer.

45. The Centre also requests the Committee to consider the following:

(a) The provision of support in identifying appropriate partner organizations, national channels of communication for strengthening outreach, and strategies to enhance collaboration with government agencies related to the thematic areas;

(b) The recommendation of the Governing Council at its thirteenth session to significantly increase the financial support to ensure that the Centre has the minimum level of human and financial resources required to effectively implement its mandate of assisting member States to achieve the Sustainable Development Goals. The Council also recommended that the host country, India, should substantially enhance its contribution to the Centre and that non-contributing Council members should consider providing voluntary contributions to the Centre to strengthen its financial basis;

(c) Financing for new technical cooperation projects or developing new joint projects, based on the requests for technical cooperation activities by member States;

(d) Contributing national experts to work at the Centre, which would enable the experts to benefit from work experience at the Centre and would ease the current human resource constraints faced by the Centre.

# Annex I

**Table 1**  
**Asian and Pacific Centre for Transfer of Technology activities**  
**carried out during the reporting period of 1 January 2016 to**  
**30 June 2018**

| <i>No.</i> | <i>Title, venue, date</i>                                                                                                                                     | <i>Results</i>                                                                                                                                                                                                                          | <i>Partners</i>                                                                                                                   | <i>Sustainable Development Goal</i> |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| 1          | Workshop on Developing and Strengthening the Manufacturing Sector through Skill Development in Networking and Technology Transfer, New Delhi, 28 January 2016 | Contributed to enhanced capacities of participants on technology transfer and business networking and its implementation                                                                                                                | Federation of Indian Export Organizations, India                                                                                  | 9                                   |
| 2          | Workshop on Best Practices in Mung Bean (Green Gram) Seed Production, Quality Control and Maintenance, Magway, Myanmar, 29 February and 1 March 2016          | Sharing of best practices in mung bean seed production; 28 participants attended from organizations and nodal agencies from Myanmar and experts from India                                                                              | Department of Agricultural Research, Myanmar                                                                                      | 8, 9                                |
| 3          | Training programme on New Models of Partnership and Technology Transfer, Ghaziabad, India, 9–11 March 2016                                                    | Enhanced capacities of participants on technology transfer and commercialization                                                                                                                                                        | Human Resource Development Centre of the Council of Scientific and Industrial Research, Ministry of Science and Technology, India | 9                                   |
| 4          | Food Security – Low Water Agriculture – The Next Solution?, Kuala Lumpur, 13 April 2016                                                                       | Increased awareness of the contribution of agriculture to food security; representatives from Indonesia, Malaysia, and Singapore attended                                                                                               | Human Life Advancement Foundation, Malaysia                                                                                       | 2, 6, 7                             |
| 5          | Regional Agricultural Innovation Summit, Bangkok, 25 and 26 May 2016                                                                                          | Increased awareness of contribution of agricultural technologies to addressing the Sustainable Development Goals; representatives from Bangladesh, Cambodia, Japan, Nepal, Thailand, the United States of America and Viet Nam attended | United States Agency for International Development, Winrock International                                                         | 2, 6                                |

| <i>No.</i> | <i>Title, venue, date</i>                                                                                                                                                                                                                       | <i>Results</i>                                                                                                                                                                                                                                                                                                                                                  | <i>Partners</i>                                                                                               | <i>Sustainable Development Goal</i> |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|-------------------------------------|
| 6          | Fourth China-South Asia Expo and Second Forum on China-South Asia Technology Transfer and Collaborative Innovation, Kunming, China, 12–14 June 2016                                                                                             | Increased awareness of the activities of the Centre in technology innovation and transfer of technology; 1,000 participants from South Asian countries attended                                                                                                                                                                                                 | Yunnan Academy of Scientific and Technical Information, China                                                 | 9                                   |
| 7          | Regional Workshop on Overcoming Critical Bottlenecks to Accelerate Renewable Energy Deployment in ASEAN+6 Countries, Bangkok, 14 and 15 June 2016                                                                                               | Enhanced knowledge of how regional and international platforms could be effectively used for promoting renewable power deployment in ASEAN+6 countries; 107 participants attended, including from Cambodia, France, Indonesia, Japan, the Lao People's Democratic Republic, Malaysia, Myanmar, the Philippines, Thailand, the United Arab Emirates and Viet Nam | International Renewable Energy Agency, Thailand Institute for Scientific and Technological Research, Thailand | 7, 9, 17                            |
| 8          | Second National Consultation on Sustainable Development Goals 8 and 9, New Delhi, 2 and 3 August 2016                                                                                                                                           | Enhanced knowledge of government initiatives impacting eco-innovation; attended by 70 senior policymakers and representatives from think tanks and international agencies                                                                                                                                                                                       | Research and Information System for Developing Countries, India                                               | 8, 9                                |
| 9          | Regional Workshop on Enhancing Innovation and Competitiveness of Micro-, Small and Medium-sized Enterprises in Response to the Association of Southeast Asian Nations (ASEAN) Integration for Agro-Enterprise, Manila, 28 and 29 September 2016 | Contributed to enhanced understanding of how agro-enterprises in the Philippines could leverage opportunities provided by the ASEAN framework; recommended that the Department of Science and Technology include agro-enterprises in its mandate; 59 participants attended, including from Indonesia, Japan and the Philippines                                 | Technology Application Promotion Institute, Department of Science and Technology, Philippines                 | 7, 9, 17                            |
| 10         | First Indonesia International Conference on Science Technology Park, Bogor, Indonesia, 12 and 13 October 2016                                                                                                                                   | Policy recommendations for enabling the setting up of science technology parks for promoting innovation; attended by 100 senior policymakers, researchers and representatives from the private sector                                                                                                                                                           | Indonesian Institute of Sciences, Indonesia                                                                   | 9                                   |

| <i>No.</i> | <i>Title, venue, date</i>                                                                                                                                                                                                           | <i>Results</i>                                                                                                                                                                                                                            | <i>Partners</i>                                                                                                                  | <i>Sustainable Development Goal</i> |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| 11         | Accelerating Low-Carbon Technology Transfer: Helping Developing Countries Implement Nationally Determined Contributions, Asian Development Bank Roundtable and Singapore International Energy Week 2016, Singapore, 27 October 2016 | Identification of the support needed by developing countries to allow and foster accelerated transfer and diffusion of low-carbon technologies and increased knowledge of key energy-sector insights on the challenges faced              | Economic Research Institute for ASEAN and East Asia, Singapore                                                                   |                                     |
| 12         | Workshop on Practices in Farmer-led Seed Enterprise Development for Improving Seed Quality and Enhancing Revenue Generation, Mandalay, Myanmar, 8 and 9 November 2016                                                               | Identified solutions and best practices for establishing effective and efficient farmer-led seed enterprises in the dry zone of Myanmar; 20 participants attended mainly from India and Myanmar                                           | Department of Rural Development of the Ministry of Agriculture, Livestock and Irrigation, Myanmar                                | 2, 9                                |
| 13         | International Conference on Innovation Strategies for Sustainable Development, Islamabad, 19 December 2016                                                                                                                          | Increased awareness of best practices for public policies and strategies for facilitating innovation for sustainable development, supporting innovative entrepreneurs; attended by 80 participants                                        | Ministry of Science and Technology, Pakistan                                                                                     | 17                                  |
| 14         | Twelfth session of the Governing Council of the Asian and Pacific Centre for Transfer of Technology, Islamabad, 19–21 December 2016                                                                                                 | Enhanced capacities of policymakers for South-South cooperation; 10 Governing Council member countries participated: China, Fiji, Indonesia, Malaysia, Pakistan, the Philippines, the Republic of Korea, Sri Lanka, Thailand and Viet Nam | Ministry of Science and Technology, Pakistan                                                                                     | 17                                  |
| 15         | International Seminar on Technology Transfer as a Tool to Optimize IP and Innovation, New Delhi, 9 January 2017                                                                                                                     | Increased awareness of best practices for technology transfer and commercialization                                                                                                                                                       | National Research Development Corporation, India                                                                                 | 9                                   |
| 16         | Consultative meetings on Science, Technology and Innovation, Tehran, 9 and 10 April 2017                                                                                                                                            | Enhanced awareness of policymakers of science, technology and innovation policies and strategies for innovation                                                                                                                           | Ministry of Science, Research and Technology, Iranian Research Organization for Science and Technology, Islamic Republic of Iran | 9, 17                               |

| <i>No.</i> | <i>Title, venue, date</i>                                                                                                                                                                     | <i>Results</i>                                                                                                                                                                                                                                                                                 | <i>Partners</i>                                                                                        | <i>Sustainable Development Goal</i> |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|-------------------------------------|
| 17         | International Workshop on Science, Technology, Innovation and Management for Water Sustainability, New Delhi, 19 and 20 April 2017                                                            | Increased knowledge and understanding of innovative water technologies and their commercialization and use for providing affordable and safe water; 40 participants attended, namely from Bangladesh, Bhutan, India, Nepal and Sri Lanka                                                       | National Institute of Science, Technology and Development Studies, India                               | 6, 9                                |
| 18         | International Conference on Nanotechnology for Safe and Sustainable Development and consultative meeting on proposed ASEAN nano-safety networking platform, Putrajaya, Malaysia, 2–4 May 2017 | Proposed establishing a nano-safety networking platform for stakeholders in ASEAN; 112 participants attended, namely from Indonesia, Malaysia, Pakistan, the Philippines, the Republic of Korea, Singapore, Thailand and Viet Nam                                                              | National Nanotechnology Centre, Ministry of Science, Technology and Innovation, Government of Malaysia | 9                                   |
| 19         | Regional Consultation on Innovation Strategies for Sustainable Development through the Water-Energy-Food Nexus, Bangkok, 28 and 29 June 2017                                                  | Enhanced capacities of policymakers for regional cooperation and strategies for sustainable management of water, energy and food resources; 111 participants attended, namely from China, India, Indonesia, Japan, Malaysia, the Philippines, Thailand and Viet Nam                            | Thailand Institute of Scientific and Technological Research, Thailand                                  | 2, 6 and 7                          |
| 20         | Symposium on Progress on Sustainable Development Goal 7 and its Interlinkages with other Sustainable Development Goals, Bangkok, 28–30 June 2017                                              | Increased knowledge of policy recommendations for sustainable development through water-energy-food policies                                                                                                                                                                                   | Department of Economic and Social Affairs of the United Nations                                        | 7                                   |
| 21         | Indo-Global Skills Summit and Expo 2017, New Delhi, 28 July 2017                                                                                                                              | Enhanced understanding of the role of government in promoting innovative entrepreneurship                                                                                                                                                                                                      | Indus Foundation, India                                                                                | 9                                   |
| 22         | International Innovation Fair and International Workshop on Supporting Innovative Entrepreneurs and the Role of Technology Transfer, Visakhapatnam, India, 9–11 September 2017                | Contributed to enhanced capacities of participants on opportunities for technology transfer and innovation-led entrepreneurship; 104 participants attended, including from Bahrain, Bangladesh, China, India, Indonesia, the Islamic Republic of Iran, Kazakhstan, Lebanon, Morocco, Pakistan, | Government of Andhra Pradesh, India, Indian Innovators Association, India                              | 17                                  |

| No. | Title, venue, date                                                                                                                                                       | Results                                                                                                                                                                                                                                                                                      | Partners                                                                                                                                                                                 | Sustainable<br>Development<br>Goal |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|
|     |                                                                                                                                                                          | the Philippines, the Republic of Korea, Singapore, Switzerland, the Syrian Arab Republic and Ukraine                                                                                                                                                                                         |                                                                                                                                                                                          |                                    |
| 23  | International Training Programme on Skill Development and Employment Generation, Noida, Uttar Pradesh, India, 15 September 2017                                          | Enhanced knowledge and capacities of participants on technology transfer tools and its implementation; 30 countries were represented                                                                                                                                                         | Ministry of Labour and Employment, Ministry of External Affairs, India, International Labour Organization                                                                                | 8, 9, 17                           |
| 24  | Regional Workshop on Trade and Environment for Asia and Pacific Economies, Colombo, 18 and 19 September 2017                                                             | Contributed to the knowledge of policymakers and senior officials on trade promotion and environmental policy development; more than 30 senior officials involved in trade promotion and environmental policy development from 20 countries in the Asia-Pacific region actively participated | Trade, Investment and Innovation Division of the Economic and Social Commission for Asia and the Pacific (ESCAP), World Trade Organization, Ministry of Industry and Commerce, Sri Lanka | 8, 9, 17                           |
| 25  | International Workshop on Promoting Biotechnology Education, Research and Knowledge Transfer in Asia and the Pacific, Faridabad, India, 15 and 16 October 2017           | Enhanced opportunities for multilateral biotechnology mobility; 35 participants attended, from Cambodia, India, Indonesia, Japan, the Lao People's Democratic Republic, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Viet Nam                                                 | United Nations Educational, Scientific and Cultural Organization, Ministry of Science and Technology, India, Ministry of Education, Culture, Science and Technology, Japan               | 7, 9, 17                           |
| 26  | Workshop on Technology Commercialization and Transfer, Ghaziabad, India, 1–3 November 2017                                                                               | Enhanced capacities of participants on technology transfer and commercialization; 35 participants attended from the Council of Scientific and Industrial Research institutes from India and representatives from the Embassy of the Russian Federation in India                              | Human Resource Development Centre, of the Council of Scientific and Industrial Research, Government of India                                                                             | 9, 17                              |
| 27  | ESCAP and World Intellectual Property Organization Regional Meeting on Building the Innovation and Technological Capacities of Least Developed Countries in Asia and the | Recognition of priority needs of least developed countries in the region to develop cooperation programmes in innovation and technology capacity-building; 27 participants attended, from Bhutan, Cambodia, the Lao                                                                          | Division of Trade, Investment and Innovation of ESCAP, World Trade Organization                                                                                                          | 9, 17                              |

| <i>No.</i> | <i>Title, venue, date</i>                                                                                                                          | <i>Results</i>                                                                                                                                                                                                                                                                                | <i>Partners</i>                                                                                   | <i>Sustainable Development Goal</i> |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-------------------------------------|
|            | Pacific, Bangkok, 6 and 7 November 2017                                                                                                            | People's Democratic Republic, Malaysia, Myanmar and Nepal                                                                                                                                                                                                                                     |                                                                                                   |                                     |
| 28         | Thirteenth session of the Governing Council of the Asian and Pacific Centre for Transfer of Technology, Manila, 28–30 November 2017                | Enhanced capacities of policymakers for South-South cooperation; 13 Governing Council member countries participated: Bangladesh, China, Fiji, India, Indonesia, the Islamic Republic of Iran, Kazakhstan, Malaysia, Pakistan, the Philippines, the Republic of Korea, Sri Lanka, and Thailand | Technology Application and Promotion Institute, Department of Science and Technology, Philippines | 17                                  |
| 29         | Regional Consultation on Achieving Sustainable Development Goals through Science, Technology and Innovation, Bangkok, 20 March 2018                | Enhanced capacities of policymakers for South-South cooperation for achieving the Sustainable Development Goals through science, technology and innovation; 80 participants attended from several countries, including from Japan, the Republic of Korea and Singapore                        | Ministry of Science and Technology, Thailand                                                      | 9, 17                               |
| 30         | Workshop on Strengthening Technology Transfer and Technology Commercialization Capacities of Countries in Central Asia, Astana, 30 and 31 May 2018 | Increased capacities with regard to technology transfer and technology commercialization in Central Asia; 200 participants attended                                                                                                                                                           | Economic Commission for Europe, National Agency for Technological Development, Kazakhstan         | 9, 17                               |
| 31         | Third Forum on China-South Asia Technology Transfer and Collaborative Innovation, Kunming, China, 14–16 June 2018                                  | Increased capacities of participants on technology transfer and innovation; 800 participants attended                                                                                                                                                                                         | Ministry of Science and Technology, China, government of Yunnan Province, China                   | 9, 17                               |

**Table 2**  
**Special issues of *Asia-Pacific Tech Monitor* (2016–2018)**

| <i>No.</i> | <i>Issue</i>          | <i>Special themes</i>                                                                                                                                                                                                |
|------------|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1          | January–March 2018    | Enhancing technology access to reduce inequality                                                                                                                                                                     |
| 2          | October–December 2017 | Big data innovation for sustainable development and humanitarian action                                                                                                                                              |
| 3          | July–September 2017   | Innovation, technology transfer and management for safe and sustainable water                                                                                                                                        |
| 4          | April–June 2017       | Science technology and innovation for achieving the Sustainable Development Goals in the Asia-Pacific region                                                                                                         |
| 5          | January–March 2017    | Sustainable energy technologies: challenges and opportunities for Asia and the Pacific (in support of the theme of the seventy-third session of the Economic and Social Commission for Asia and the Pacific (ESCAP)) |
| 6          | October–December 2016 | Digital technology and economy fostering inclusive development                                                                                                                                                       |
| 7          | July–September 2016   | Social innovation for inclusive and sustainable development: current practices and challenges                                                                                                                        |
| 8          | April–June 2016       | Technology transfer through foreign direct investment: policy approaches in the Asia-Pacific region                                                                                                                  |
| 9          | January–March 2016    | Science, technology and innovation to achieve the 2030 Agenda for Sustainable Development (in support of the theme of the seventy-second session of the Commission)                                                  |

## Annex II

### Forthcoming activities of the Asian and Pacific Centre for Transfer of Technology, from June 2018

| <i>No.</i> | <i>Date</i>       | <i>Title</i>                                                                                                                                                                            | <i>Venue</i>     | <i>Partners</i>                                                                                                                   |
|------------|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| 1          | 27–29 June        | Workshop on Rural Industries: Establishment, Sustainability and Challenges                                                                                                              | Sonipat, India   | Indian Institute of Technology Delhi, India                                                                                       |
| 2          | 18 and 19 July    | Regional Forum on Strategies to Enhance Innovation and Management Capacities of Start-ups and Small and Medium-sized Enterprises                                                        | Manila           | Technology Application and Promotion Institute, Department of Science and Technology, Philippines                                 |
| 3          | 27 and 28 August  | Regional Workshop on Achieving the Sustainable Development Goals through Science, Technology and Innovation Sectoral Interventions                                                      | Bangkok          | Thailand Institute of Scientific and Technological Research, Thailand                                                             |
| 4          | 29–31 August      | Second session of the Committee on Information and Communications Technology, Science, Technology and Innovation                                                                        | Bangkok          |                                                                                                                                   |
| 5          | September/October | Workshop on Technology Transfer and Technology Commercialization                                                                                                                        | Ghaziabad, India | Human Resource Development Centre of the Council of Scientific and Industrial Research, Ministry of Science and Technology, India |
| 6          | 23 and 24 October | 2018 fourth industrial revolution conference on new and emerging technologies in achieving the Sustainable Development Goals                                                            | Kuala Lumpur     | Ministry of Science, Technology and Innovation, Malaysia                                                                          |
| 7          | 1 and 2 November  | International Conference on Technology Transfer and Internationalization of Technology-based Small and Medium-sized Enterprises and Start-ups                                           | Jakarta          | Indonesian Institute of Sciences, Indian Ocean Rim Association                                                                    |
| 8          | 27–30 November    | Fourteenth session of the Governing Council of the Asian and Pacific Centre for Transfer of Technology and international conference on a theme related to new and emerging technologies | Bangkok          | Ministry of Science and Technology, Thailand Institute of Scientific and Technological Research, Thailand                         |